



Armed Forces College of Medicine

AFCM



Cardiopulmonary module

Clinical Integrated Cases
Pretest 3

Question 1



A 25-year-old woman presented to the emergency room after an accident. A large artery was severed caused an estimated 600 ml of blood to be lost. On examination, her blood pressure was 90/60 mmHg. What is the structural characteristics of the blood vessel that would most importantly respond to the increased sympathetic nerve activity expected to happen in this case?

- a) Many elastic laminae of the tunica media.
- b) Prominent internal and external elastic lamina.
- c) Few smooth muscle layers in the tunica media.

Question 2



A 63-year-old man with essential hypertension has gone several weeks without taking his medications. He arrived at the emergency department after falling on his right hand. He had a heart rate of 90 and a blood pressure of 170/115 mmHg. Which of the following would most likely normally responsible for blood pressure regulation?

- a) Smooth muscles of the aorta.
- b) Tunica media of arterioles.
- c) Elastic fibers of the muscular arteries.

Question 3



A physiologist is studying the effect of modulator X on arterial blood pressure. Modulator X was found to promote sodium excretion and reduce the total peripheral resistance. Modulator X acts by preventing degradation of which of the following substances?

- a. Aldosterone.
- b. Antidiuretic hormone.
- c. Renin.
- d. Thromboxane.

Question 4



An acute decrease in arterial blood pressure elicits which of the following compensatory changes?

- a. Decreased firing rate of the carotid sinus nerve
- b. Increased parasympathetic outflow to the heart
- c. Decreased heart rate
- d. Decreased myocardial contractility
- e. Increased arteriolar diameter

Question 5



A 62- year-old hypertensive woman presented to the physician for routine checkup. Her blood pressure was 150/100 mmHg. She did not take her medications on regular basis for the past. Laboratory investigations revealed elevated serum creatinine. Which of the following is a gross feature of the kidney in this patient?

- A. Large Size.
- B. Smooth surface.
- C. Adherent capsule
- D. Reduced peri-pelvic fat
- E. Cortical hemorrhage

Question 6



A 25 - year - old heavy smoker man presented to the emergency room with severe headache and blurring of vision. His blood pressure was 200 / 130 mm Hg. Which of the following microscopic features is seen in his blood vessels?

- A. Calcification of the media of medium sized arteries.
- B. Inflammation of the arteries, adjacent veins and nerves.
- C. Coagulative necrosis of the wall of medium sized arteries
- D. Pressure atrophy of the media of medium sized

Question 7



Which of the following is the mechanism of action of perindopril?

- a) Decreases angiotensin II formation
- b) Decreases bradykinin formation
- c) Renin inhibition
- d) Inhibition of Na-K ATPase pump
- e) Potassium channel opener

Question 8



A hypertensive patient well controlled on perindopril developed arthritis for which he was prescribed a nonsteroidal anti-inflammatory drug. Later, the patient noticed that his blood pressure increased again, and the doctor said it might be due to a drug interaction which impaired the hypotensive effects of ACE inhibitors. Which of the following could explain this effect?

- a) Blocking L-type Ca channels
- b) blocking bradykinin-mediated vasodilation
- c) prostaglandin accumulation
- d) increases peripheral resistance

Question 9



Which of the following is considered a lifestyle measure to reduce high blood pressure?

- A) Sedentary life
- B) Weight loss
- C) Smoking
- D) Salt intake
- E) Fat rich diet

Question 10



A 55 yrs old male patient had 3 readings in different occasions of his Bp in complete resting condition and the average of his Bp readings is 160/100 mmHg

According to ESC guidelines he is in which stage of hypertension?

- a- Not hypertensive
- b- Stage I
- c- Stage II
- d- Stage III

Question 11



A 59-year-old man comes to the emergency department because of dizziness and confusion. Medical history is remarkable for a 10-year history of hypertension and a 30-year history of alcohol use disorder. He was last seen by a physician 3 years ago. He has not been taking antihypertensive medication or adhering to dietary recommendations since his last office visit. His blood pressure is 178/108 mm Hg. Which of the following is most likely to be increased in his cerebral circulation?

- ☐ A. Arteriovenous anastomoses
- ☐ B. Arteriolar density
- ☐ C. Arteriolar lumen radius
- ☐ D. Arteriolar wall thickness
- ☐ E. Capillary density

Question 12



In a 45 years old male, who is diabetic and chronic heavy smoker, the following systolic blood pressure reading is diagnostic of hypertension:

- A) 121 mmHg
- B) 126 mmHg
- C) 131 mmHg
- D) 136 mmHg
- E) 141 mmHg

Question 13



A 54-year-old woman with a 10-year history of poorly controlled hypertension comes to the physician for a routine follow-up. She had an ischemic stroke 3 years ago. Current medications include a thiazide diuretic. Temperature is 36.4°C (97.6°F), pulse is 74/min, respirations are 23/min, and blood pressure is 165/92 mm Hg. Which of the following sets of changes best describes the arterioles of this patient compared to a normal, non-hypertensive individual?

	Density (number/mm ³)	Wall:Lumen Ratio	Total Luminal Cross- Sectional Area
A.	↓	↓	↓
B.	↓	↑	↓
C.	↔	↓	↑
D.	↔	↔	↑
E.	↑	↑	↓

Question 14



A 65-year-old man comes to the physician for a health maintenance examination. His past medical history includes hyperlipidemia and a cataract in the right eye. He is currently taking atorvastatin and hydrochlorothiazide. He has smoked 1 pack of cigarettes daily for the past 20 years and does not drink alcohol. His temperature is 37.0°C (98.6°F), pulse is 74/min, respirations are 12/min, and blood pressure is 155/75 mm Hg. Physical examination shows strong peripheral pulses. There is no murmur on cardiac auscultation. Which of the following is most likely decreased in this patient to cause the widened pulse pressure?

- ☐ A. Arterial compliance
- ☐ B. Cardiac output
- ☐ C. Myocardial contractility
- ☐ D. Stroke volume
- ☐ E. Total peripheral resistance



Thank
you

